Avaya Integrated Management Application Notes: Release 3.0 Windows Installation Properties - Issue 1.0

Abstract

This paper attempts to provide the customer with relevant information about the Integrated Management Microsoft Windows-based applications in order for customers to make an assessment of the necessary protocols and services needed to run on their Windows server.

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1. Introduction

This paper covers information on what the Integration Management software configures on the customer-provided Windows Server. It covers the following:

1. Installed Files, Default Directory Locations and Registry Entries
2. Application Network Communication Information
    - Service
    - Default Port
    - Transport
    - Protocol
    - Direction

This paper attempts to provide the customer with relevant information about the Integrated Management Windows-based applications in order for customers to make an assessment of the necessary protocols and services needed to run on their Windows server.

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1.1. Notation, Terminology And Acronyms

The following table gives meanings for most of the terms and acronyms used in this document.

Term	Meaning
API	Application Programming Interface
CLAN	Control-LAN, a Communication Manager IP interface circuit pack
FIFO	First In First Out
FTP	File Transfer Protocol
GUI	Graphical User Interface
HKCU	HKey Current User
HKLM	HKey Local Machine
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
HTTPS	HyperText Transfer Protocol Secure
IP	Internet Protocol
NMSI	Network Management System Integration
OV	HP OpenView
PPP	Point-to-Point Protocol
RMATS	Remote Maintenance and Test System
RMI	Remote Method Invocation
SAT	System Access Terminal
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
SSH	Secure Shell
T&M	Time and Materials
TCP	Transmission Control Protocol
TSC	Technical Service Center
UDP	User Datagram Protocol
VNC	Virtual Network Computing - software that makes it possible to view and fully-interact with one computer from any other computer or mobile device anywhere on the Internet
VPN	Virtual Private Network

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2. Integrated Management Relevant Directories:

This section lists the directories used and created by various Integrated Management applications. The directories are the locations on the Windows server where the Integrated Management files are installed.

2.1. Integrated Management Common Components:

Default Directories:

C:\Program Files\Avaya\Required Components	contains Integrated Management Client and Server Configuration GUI files, launchApp, and *.vl files
C:\Program Files\Avaya\JRE	contains the Java Runtime Environment needed by various applications

Registry Entries:

HKLM\SOFTWARE\Avaya\Avaya Integrated Management\
HKLM\SOFTWARE\Avaya\JRE\
HKLM\SOFTWARE\Avaya\JRE\AppsInstalled\

2.2. Integrated Management Launch Page:

Default Directories:

C:\Program Files\Avaya\Home Page\html	contains Integrated Management Launch Page HTML files
C:\Program Files\Apache2\cgi-bin	contains perl scripts used for the launch page

Registry Entries:

HKLM\SOFTWARE\Avaya\Avaya Integrated Management\

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2.3. Avaya Site Administration:

Default Directories:

C:\Program Files\Avaya\Site Administration\bin	program executable files and *.dll files
C:\Program Files\Avaya\Site Administration\data	data files; such as bitmaps, defaults and list files
C:\Documents and Settings\<username>\ Application Data\Avaya\Site Administration\user	location of persist.dat, template data, button label print data, etc… Also default directory for reports and import/export tasks
C:\Documents and Settings\<username>\ Application Data\Avaya\Site Administration\ user\Backup	Backup of persist.dat, template data, button label print data, etc…

Registry Entries:

HKLM\SOFTWARE\Avaya\Avaya Integrated Management\
HKLM\SOFTWARE\Avaya\Avaya Integrated Management Avaya Site Administration 3.0\
HKLM\SOFTWARE\Avaya\Avaya Site Administration\
HKLM\SOFTWARE\Avaya\Avaya Site Administration\SASL Library\
HKLM\SOFTWARE\Avaya\Avaya Site Administration \System\
HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment\
HKCU\SOFTWARE\Avaya\Avaya Site Administration\

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2.4. Voice Announcement Manager:

Default Directories:

C:\Program Files\Avaya\Voice Announcement Manager\bin	contains program executable Jar files
C:\Program Files\Avaya\Voice Announcement Manager\data	contains data files; such as property files, error logs, status logs, etc… Also default location for storage of announcement files
C:\Program Files\Avaya\Voice Announcement Manager\images	contains JPEG, GIF and bitmap image files
C:\Program Files\Avaya\Voice Announcement Manager\ossidoc	contains OSSI mapping files

Registry Entries:

HKLM\SOFTWARE\Avaya\Avaya Integrated Management\
HKLM\SOFTWARE\Avaya\Avaya Integrated Management Administration Tools 3.0\
HKLM\SOFTWARE\Avaya\Voice Announcement Manager\
HKLM\SOFTWARE\Avaya\JRE\
HKLM\SOFTWARE\Avaya\JRE\AppsInstalled\
HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment\

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2.5. VoIP Monitoring Manager:

Default Directories:

C:\Program Files\Avaya\VoIP Monitoring Manager\bin	contains program executable Jar files

Registry Entries:
HKLM\SOFTWARE\Avaya\Avaya Integrated Management\
HKLM\SOFTWARE\Avaya\Avaya Integrated Management\Databse Password\
HKLM\SOFTWARE\Avaya\Avaya Integrated Management Monitoring Server 3.0\
HKLM\SOFTWARE\Avaya\VoIP Monitoring Manager\
HKLM\SOFTWARE\Avaya\VoIP Monitoring Manager\RtcpMon\
HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment\
HKLM\SYSTEM\CurrentControlSet\Services\SNMP\Parameters\ExtensionAgents\
HKLM\SOFTWARE\Avaya\JRE\
HKLM\SOFTWARE\Avaya\JRE\IApps_Installed\
HKLM\SOFTWARE\Software\Apache Group\Apache\
HKLM\SOFTWARE\Avaya\Apache\2.0.54\

2.5.1. WebLM:

Default Directories:

C:\Program Files\Apache Group\Tomcat 4.1\ webapps\WebLM	contains expanded war file, once WebLM is started

Registry Entries:
HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment\JAVA_HOME\
HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment\CATALINA_HOME\

2.5.2. MSDE:

Default Directories:

C:\Program Files\Microsoft SQL Server	contains program executable files

Registry Entries:
HKLM\SOFTWARE\Microsoft\MSSQLSERVER\

SQL Logins Created:
sa (user defines password during installation)
VmmUser

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2.6. Network Management:

Default Directories:

C:\Program Files\Avaya\Network Management	contains program executable Jar files

Registry Entries:

HKLM\SOFTWARE\Apache Group\Apache\2.0.54\
HKLM\SOFTWARE\Avaya\Avaya Integrated Management\
HKLM\SOFTWARE\Avaya\Avaya Integrated Management Windows Enterprise Server 3.0\
HKLM\SOFTWARE\Avaya\CVS\CajunView\
HKLM\SOFTWARE\Avaya\CVS\CajunView\Components\
HKLM\SOFTWARE\Avaya\CVS\CajunView\Versions\
HKLM\SOFTWARE\Avaya\JRE 1.4.2_03\
HKLM\SOFTWARE\Avaya\JRE 1.4.2_03\AppsInstalled\
HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment\

2.7. Provisioning and Installation Manager (PIM):

Default Directories:

C:\Program Files\Avaya\Jboss3.2.5	contains program executable Jar files

Registry Entries:

HKLM\SOFTWARE\Avaya\Avaya Provisioning and Installation Manager 3.0\

NOTE: PIM must be installed on the same server as Network Management.

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2.8. Network Management System Integration (NMSI):

The installation of NMSI will follow the directory structure created by the HPOV installation. Since NMSI only integrates with HPOV, all files for NMSI will be installed under the HPOV installation directory.

Default Directories:

Following subdirectories are created under the main installation directory of HPOV:

\classes\	mfpma.jar
\bin\	nmsiTalk.exe
\www\htdocs\bitmaps\C\vender/Avaya\	bitmap files delivered by development
\registration\C\Avaya\	VisAbility
\www\registration\jovw\C\	VisAbility
\bitmaps\C\vendor\Avaya	Bitmap files delivered by development
\fields\C\	Avaya_nmsi_fields and Avaya_voice_fields
\symbols\C\Vendor\Avaya\	Symbol files delivered by development
\snmp_mibs\Vendor\Avaya	*.asn1 mibs delivered by development

Registry Entries:

HKLM\SOFTWARE\Avaya\Avaya Integrated Management\
HKLM\SOFTWARE\Avaya\Avaya Integrated Management NMSI 3.0\
HKLM\SOFTWARE\Avaya\JRE\
HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment\

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Table 1: Windows-Based Application Network Communication Information

Source	Source Port	Source Port Configurable?	Destination	Destination Port	Destination Port Configurable?	Transport	Protocol	Direction	Description
IP Phones	2049-3027	Yes	VMM Server	5005	Yes	TCP	RTCP	In	IP Phones send IP statistics to VMM Server
Medpro Boards	2049-3027	Yes	VMM Server	5005	Yes	TCP	RTCP	In	Medpro Boards send IP statistics to VMM Server
Media Gateways	5005	Yes	VMM Server	5005	Yes	TCP	RTCP	In	Media Gateways send IP statistics to VMM Server
VMM	1024+	No	SQL Database	1433	No	TCP	sql	In	SQL Database Server
WebLM	1024+	No	Tomcat	3999	Yes	TCP	http	In	Used by WebLM to communicate to Tomcat Web/Servlet Server
PIM	1024+	No	JBoss	2784-2789	Yes	TCP	RMI	In	Used by JBOSS on PIM Server
PIM	1024+	No	Tomcat	2020	Yes	TCP	http	In	Used by PIM to communicate to Tomcat Web/Servlet Server; Part of JBoss installation
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2843	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; cv.jum.rmi.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2400	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; cv.trap.port

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Source	Source Port	Source Port Configurable?	Destination	Destination Port	Destination Port Configurable?	Transport	Protocol	Direction	Description
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2401	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; cv.launcher.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2402	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; llm.clients.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2403	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; fileaccess.rmi.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2404	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; userver.rmi.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2405	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; llm.servers.port

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Source	Source Port	Source Port Configurable?	Destination	Destination Port	Destination Port Configurable?	Transport	Protocol	Direction	Description
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2406	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; userver.socket.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2407	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; service.smuserdb.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2408	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; service.snmpinfo.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2409	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; smon.rmi.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2410	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; nmlogin.local.port

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Source	Source Port	Source Port Configurable?	Destination	Destination Port	Destination Port Configurable?	Transport	Protocol	Direction	Description
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2411	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; nmlogin.remote.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2412	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; nmlogin.rmi.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2413	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; llm.fileacess.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2500	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; smServer.rmi.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2330	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; amServer.rmi.port

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Source	Source Port	Source Port Configurable?	Destination	Destination Port	Destination Port Configurable?	Transport	Protocol	Direction	Description
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2331	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; amProcess.rmi.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2332	No	TCP	Multiple	In	Used for Client access, RMI, Login, Database, and Trap services; llm.amClient.port
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2900-2950	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; rmiport.min and rmiport.max
Network Management (Standalone or NNM Integration)	1024+	No	Multiple	2546	No	TCP	RMI	In	Used for Client access, RMI, Login, Database, and Trap services; cv.jumDB.rmi.port
NM Client	1024+	No	NM Server	1980	Yes	TCP	Multiple	In	Multi-Socket Port
Trap Manager	1024+	No	NM Server	6169	Yes	TCP	RMI	In	RMI port for Trap Manager
VMM Client	1024+	No	VMM Server	1099, 49177, 51173, 63006	No	TCP	RMI	Bi	VMM Client to Server communication

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Source	Source Port	Source Port Configurable?	Destination	Destination Port	Destination Port Configurable?	Transport	Protocol	Direction	Description
VMM Server	1024+	No	Network Management System	162	No	UDP	SNMP	Out	Optional VMM SNMP Traps
Management PC	1024+	No	Tomcat	80	Yes	TCP	http	In	Tomcat Servlet Container
Management PC	1024+	No	Apache	8080	Yes	TCP	http	In	Apache Web Server (Integrated Management Database)
Management PC	1024+	No	Apache	443	No	TCP	https	In	Apache Secure Web Server (Integrated Management Database)
Management PC	1024+	No	Windows Server	22	No	TCP	Ssh	In	Incoming SSH access
Management PC	1024+	No	Windows Server	23	No	TCP	telnet	In	Optional: Incoming Telnet
Management PC	1024+	No	Windows Server	21	No	TCP	ftp	In	Optional: Incoming FTP
VMM, Network Management Console	1024+	No	NMS, Communication Manager and other SNMP devices	161	No	UDP	SNMP	Bi	SNMP Access for Mgmt
Network Management Console	1024+	No	Communication Manager and other SNMP devices	162	No	UDP	SNMP	In	SNMP Traps

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Source	Source Port	Source Port Configurable?	Destination	Destination Port	Destination Port Configurable?	Transport	Protocol	Direction	Description
ASA	1024+	No	Voice Mail Servers (e.g. Intuity Audix)	23	No	TCP	telnet	Out	Telnet access to elements
ASA	1024+	No	Voice Mail Servers (e.g. Intuity Audix)	22	No	TCP	Ssh	Out	SSH access to elements
ASA/VAM	1024+	No	Customer Email Server	25	No	TCP	Smtp	Out	Email server access
VAM	1024+	No	TN2401AP Boards and Media Gateways	20, 21	No	TCP	ftp	Out	For file transfer of announcements to Media Gateways and TN2501AP boards
VAM	1024+	No	TN2401AP Boards	22	No	TCP	sftp	Out	For secure file transfer of announcements to TN2501AP boards
Network Management Console, ASA, VAM	1024+	No	Communication Manager	5022	No	TCP	Ssh	Out	SAT Service ports on Voice Systems – depends on voice system SAT service administration for port number Note: The value shown is for SAT access to the Linux-based Media Servers

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Source	Source Port	Source Port Configurable?	Destination	Destination Port	Destination Port Configurable?	Transport	Protocol	Direction	Description
Network Management Console, ASA, VAM	1024+	No	Communication Manager	5023	No	TCP	telnet	Out	SAT Service ports on Voice Systems – depends on voice system SAT service administration for port number Note: The value shown is for SAT access to the Linux-based Media Servers
ASA	1024+	No	Modular Messaging	389	No	TCP	LDAP	Out	LDAP connection to Modular Messaging for administration of subscribers
HPOV Client	1024+	No	FPM Server	2447 ovwdb	No	TCP	OV-API	Out	NMSI: HP OpenView Solaris ovwdb service daemon
HPOV Client	1024+	No	FPM Server	3700+	No	TCP	OV-API	Out	NMSI: HP OpenView GUI Map API Access (port=3700 + gui display number)

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2.9. Tomcat Servlet Container

The tomcat web server installs into the standard Tomcat Windows installation locations including the following directories:

Default Directories:
C:\Program Files\Apache Group\Tomcat 4.1 contains executable files

Registry Entries:
HKLM\SOFTWARE\Apache Group\Tomcat\

2.10. Apache Web Server

The apache web server installs into the standard Apache Windows installation locations including the following directories:

Default Directories:
C:\Program Files\Apache Group\Apache2 contains executable files

Registry Entries:
HKLM\SOFTWARE\Apache Group\Apache\

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3. Conclusion

With the information in this white paper, the customer has been provided with the relevant information about the Integrated Management Windows-based applications. This information will allow the customer to make an assessment of the necessary protocols and services needed to run on their Windows server.

4. Additional References

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